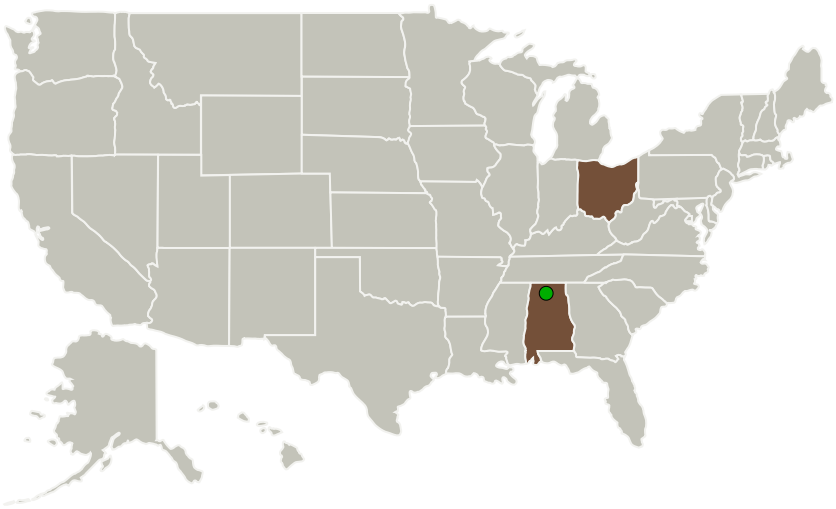
Lightweight, High Strength Nano-Composite Magnesium for Radiators, Phase I

Completed Technology Project (2014 - 2014)

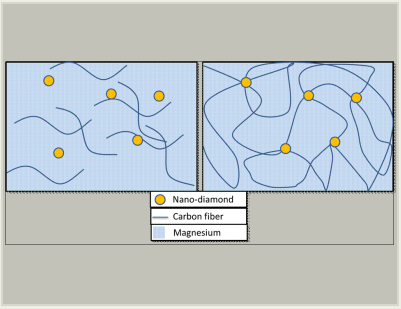
Project Introduction

In this Phase I SBIR, Terves will develop processing routes to produce high thermal conductivity magnesium composites for use in heat transfer applications such as radiator materials. Terves will use and refine ultrasonic casting processes developed over the past three years and move into a magnesium based material using high aspect ratio carbon fibers and diamond particles by dispersing in a liquid state. The cast material will be rolled into sheet and tested for thermal and structural properties and compared to currently available materials. A successful program will result in a new, high thermal conductivity material that is lighter than current aluminum composites with the same or similar strengths. This composite will be applied in spacecraft for fast and effective heat transfer, enabling lighter thermal transfer systems by removing previous design constraints.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Terves Inc.	Lead Organization	Industry	Euclid, Ohio
Marshall Space Flight Center(MSFC)	Supporting Organization	NASA Center	Huntsville, Alabama



Lightweight, High Strength Nano-Composite Magnesium for Radiators Project Image

Table of Contents

Lightweight, High Strength Nano-Composite Magnesium for Radiators, Phase I

Completed Technology Project (2014 - 2014)

Primary U.S. Work Locations	
Alabama	Ohio

Project Transitions

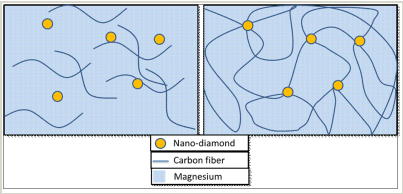
June 2014: Project Start

December 2014: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/137483)*

Images



Project Image
Lightweight, High Strength Nano-Composite Magnesium for Radiators Project Image
(https://techport.nasa.gov/image/130297)

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
Terves Inc.

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

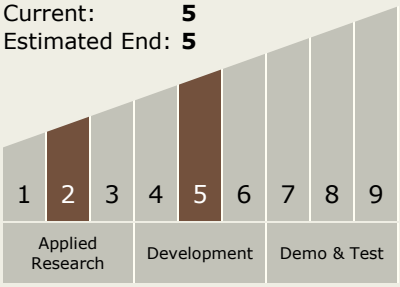
Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Nicholas Farkas

Technology Maturity (TRL)

Start: **2**
Current: **5**
Estimated End: **5**



Lightweight, High Strength Nano-Composite Magnesium for Radiators, Phase I

Completed Technology Project (2014 - 2014)

Technology Areas

Primary:

- TX14 Thermal Management Systems
  - TX14.2 Thermal Control Components and Systems
    - TX14.2.3 Heat Rejection and Storage

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System